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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,700	04/13/2004	Naoto Matsunami	500.43772X00	2922
24956 7590 01/16/2008 MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			EXAMINER DOAN, DUC T	
			ART UNIT 2188	PAPER NUMBER
			MAIL DATE 01/16/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/822,700

Applicant(s)

MATSUNAMI ET AL.

Examiner

Duc T. Doan

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Status of Claim*

Claims 1-20 have been presented for examination in this application. In response to the previous office action, claims 1-20 have been cancelled. Claims 21-27 have been added. Claims 21-27 are remain pending in this application.

Claims 21-27 are rejected.

Applicant's amendments/remarks filed 10/09/2007 and 10/11/2007. have been fully considered but they are mooted in view of new ground(s) of rejection necessitated by the Applicant's amendments to the claims.

### *U.S.C. 112, second paragraph*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-23,25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As in claim 21, it is not clear the meaning of the phrase “..with a command the location where the data is stored in the second storage device”.

Dependent claims 22-23, and 25-27 are rejected based on the dependency of claim 21.

As in claim 22,

lines 2-3 recites "the first storage device and the second storage device configuring respectively a plurality of logical volumes". It is not clear which logical volumes of plurality of

logical volumes are configured respectively to the first storage device and which logical volumes of plurality of logical volumes are configured to the second storage device.

Line 5 recites “a logical volume of the second storage device”. It is not clear how this logical volume is being differed with "the logical volumes being configured in “respectively” manner to the second storage device as stated in lines 2-3.

As in claim 26, the claim recites “the first controllers sends location of data to the third storage system..”, “the third storage system lacks antecedent basis.

As in claim 27,

Lines 1-3 recites “the first storage device and the second storage device configuring respectively plurality of logical volumes”. It is not clear which logical volumes of plurality of logical volumes are configured respectively to the first storage device and which logical volumes of plurality of logical volumes are configured to the second storage device.

lines 5-6, the phrase “the logical volume related to either the first file system or the second file system” lacks antecedent basis. It is further not clear how this “logical volume related..” recited is being differed with "the logical volumes being configured respectively to the second storage device as stated in lines 1-3.

Lines 8-9 and 13 reciting of “the specified logical volume” lacks antecedent basis. It is further not clear how “the specified logical volume..” is being differed with "the logical volumes being configured respectively to the second storage device as stated in lines 1-3.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

A person shall be entitled to a patent unless -

(a) the invention was known or used by other's in this country or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 24 is rejected under 35 U.S.C. 102 (b) as being anticipated by Mashayekhi et al (US 2003/0074596).

As in claim 24, Mashayekhi discloses a computer system comprising: a computer ( Mashayekhi's Fig 1 client 12) ; a first storage system coupled to the computer ( Mashayekhi's Fig 1 storage system of server B); and a second storage system coupled to the first storage system (Mashayekhi's Fig 1 storage system of server A), wherein the first storage system is configured to provide a first file system and a second file system (Mashayekhi's Fig 1, paragraph 4, controller of the remain server B provides file systems stored in storage devices 15 of both servers A and B), to store data related to the first file system in a first disk apparatus (disks 15 of server B), to send a command to the second storage system storing data related to the second file

system when a request for the second file system is received (NIC controller 18 of server A must access storage devices 15 of server A with a command having the location of data stored in storage devices 15 of server A, see paragraph 4).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-23,25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mashayekhi et al (US 2003/0074596) in view of Bruning, III et al (US 2002/0035667). and further in view of Wong (US 2001/0051955).

As in claim 21, Mashayekhi discloses a first storage system connected (Mashayekhi's Fig 1, storage system of sever B), via a network to a computer (Mashayekhi's Fig 1, 12 client) and a second storage system (Mashayekhi's Fig 1, storage system of sever A) comprising: a first storage device which stores data related to a first file system (file system in storage devices 15 of server A); a first controller which provides the first file system and a second file system to a computer (Mashayekhi's Fig 1, paragraph 4, controller of the remain server B provides file systems stored in storage devices 15 of both severs A and B); and

a second controller for controlling input/output operations to/from said second storage system with location of data related to the second file system (Mashayekhi's Fig 2, NIC

controller 18 of the remaining server B); wherein the second storage system includes a second storage device which stores data related to the second file system (Mashayekhi's Fig 2, second storage system of the server A, storing data of second file system in storage devices 15); and a third controller (Mashayekhi's Fig 2: NIC controller 18 of the server A), connect to the second controller (Mashayekhi's Fig 2: NIC controller 18 of the server B) , for controlling the second storage devices (devices 15 of server A), wherein the second controller accesses to the second storage system with a command having the location where the data is stored in the second storage device (NIC controller 18 of server A must access storage devices 15 of server A with a command having the location of data stored in storage devices 15 of server A, see paragraph 4 );

Mashayekhi does not expressly disclose the claim's details of mounting file system.

However, Wong's Fig 4 discloses a method of several file systems being mirrored across networks of storage systems. It would have been obvious to one of ordinary skill in the art at the time of invention to include the file system mirroring method to providing several copies of data to several clients across the networks (Wong's paragraph 20), into Mashayekhi's system and thereby further to provide more efficient and more reliable service to the clients across the networks (see Wong's paragraph 19 lines 26-34). Wong further discloses these file systems are being accessed using the typical known technique of mounting a remote file system (i.e mounting a root directory of the remote file system) at a mount point in the local file system in a single directory tree such that data in the these file systems are ready accessed by host connecting with the local file systems using the standard interface to perform the operations on the UFS/NFS file systems and their individual files or directories, see Wong's paragraphs 61-62; Wong's paragraph 67 further discloses two file systems mounting on a single directory).

As in claim 22, Mashayekhi does not explicitly disclose the claim's details associating with logical volume. However, Bruning's Fig 1A further discloses the first storage system (Fig 2, local storage system), wherein the first storage device (Bruning's Fig 2, local storage device) and the second storage device (Bruning's Fig 2, remote storage device) configured respectively a plural of logical volumes (configured as logical volumes of PL1, RL1 etc.. and logical volumes of disk arrays of each PL1, RL1 etc.. Bruning's Fig 1A, 1B), if a request related to the second file system is received from the computer, the first storage controller (Bruning's Fig 2: #22) converts the request into a command for a logical volume of the second storage device (Bruning's Fig 2: #32), and the second controller (Bruning's Fig 2: #40) sends, to the second storage system, the command (send to the remote disk array storage system of disks 32, the command to retrieve data in disks 32). By organizing physical storage devices into tier storage system, including backup capability, and maintaining mapping of locations in these physical storage devices, very large virtual volumes can be provided to users in an efficiently manner (Bruning's paragrph 4);

It would have been obvious to one of ordinary skill in the art at the time of invention to adopt Bruning's teaching in Mashayekhi's system for the reasons stated above.

As in claim 23, Mashayekhi further discloses wherein the first storage system (storage system of server B) is connected to the computer via a first network (first network to host 12) , and the second storage system (storage system of server A) is connected to the computer via a second network different from the first network (connected to host 12 via a second network, NIC 20).



As in claim 25, Mashayekhi discloses wherein the first controller receives an access request for a file from the computer, if the access request identifies a file configuring data stored in the second storage device, the first storage controller accesses data related to the file stored in the second storage device through the second controller (Mashayekhi's Fig 1, first controller of server B received an access request from host 12; if the metadata indicating data stored in the storage devices of server A, then accessing this data ).

As in claim 26, Mashayekhi further discloses that first controller manages location of data related to the first file system and the second file system, if the first controller receives a request for data related to the second file system (Mashayekhi's Fig 1, first controller of server B received an access request from host 12; if the metadata indicating data stored in the storage devices of server A, then accessing this data); Mashayekhi does not explicitly disclose the claim's aspect of the third storage system. However, Bruning's Fig 1A, 1B further disclose storage devices are organized into several storage systems such as "first" primary local storage system, redundant local storage system, "second" remote primary storage system, "third" remote redundant storage copy etc., when the first controller sends location of data in a command, the data will be provided to proper destination based on configurations of the storage systems, paragraph 10).

As in claim 27, Mashayekhi does not explicitly disclose the claim's details associating with logical volume. However, Bruning further disclose wherein the first storage device and the second storage device configuring respectively plurality of logical volumes (Bruning's Fig 1A, 1B, storage devices are configured respectively with plurality of volumes) , wherein the first controller manages relationship between either the first or the second file system and the logical

volume related to either the first file system or the second file system, if a request for the second file system is received, the first controller specifies the location of the logical volume is configured to the second storage device in the second storage system according to the relationship (Bruning's Fig 2, first controller, front end controller 22, must maintains the relationship of the file systems and logical volumes so that it can directs the requests to proper storage locations, see Bruning's abstract), and wherein the first controller (Bruning's Fig 2, Front end controller 22) sends information related to the specified logical volume to the second controller (Bruning's Fig 2, back end controller 40) , the second controller sends a command, to the second storage system via a communication line, including the information related to the specified logical volume to the second controller (Bruning's Fig 1B, the back end controller 40, sends an access command to the second storage system, represented by PR11, including the information related to logical volumes of the primary remote storage copy of the back end controller).

### ***Response to Arguments***

Applicant's arguments in response to the last office action has been fully considered but they are not persuasive. Examiner respectfully traverses Applicant's arguments for the following reasons:

Applicant's remarks are mooted in view of new ground(s) of rejection necessitated by the Applicant's amendments to the claims.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this office action.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 36 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

  
HYUNG S. SOUGH  
SUPERVISORY PATENT EXAMINER  
01/15/08